P-7: Simulate a program to glow an LED for 1 to 5 seconds using loop. Also, increase the LED ON Time and decrease the LED OFF Time in every cycle with a total constant Cycle Time of 6 seconds

Circuit:



Code:

int i,j;

void main(){

TRISB = 0x00; // Set all pins in Port B as outputs

PORTB = 0x00; // Initialize all pins to low

for(i=0; i<5; i++)

{

for(j=0;j<=i;j++)

{

Portb.f0=1;

delay\_ms(1000); // Fixed on-time of 1 second

}

for(j=5;j>i;j--)

{

Portb.f0=0;

delay\_ms(1000); // Fixed on-time of 1 second

}

}

}

P-2: Write a program for PIC microcontroller to increase and decrease a number using push button and 2 digits seven segment display also store the number in EEPROM.

Circuit:



Code:

char arraycc[]={0x3F,0x06,0x5B,0x4F,0x66,0x6D,0x7D,0x07,0x7F,0x6F};

void main() {

int bt\_zero = 0;

int bt\_one = 0;

TRISB = 0x00;

TRISC = 0x00;

TRISD = 0xFF;

PORTB = 0x00;

PORTC = 0x00;

PORTD = 0xFF;

bt\_zero = eeprom\_read(0x00);

bt\_one = eeprom\_read(0x01);

while(1) {

// for button zero

if(PORTD.F0 == 1) {

Delay\_ms(100);

if(PORTD.F0 == 1) {

bt\_zero++;

if(bt\_zero == 10) {

bt\_zero = 0;

}

}

}

// for button one

if(PORTD.F1 == 1) {

Delay\_ms(100);

if(PORTD.F1 == 1) {

bt\_one++;

if(bt\_one == 10) {

bt\_one = 0;

}

}

}

eeprom\_write(0x00, bt\_zero);

eeprom\_write(0x01, bt\_one);

delay\_ms(20);

PORTC.F0 = 0;

PORTB = arraycc[bt\_zero];

Delay\_ms(10);

PORTC.F0 = 1;

PORTC.F1 = 0;

PORTB = arraycc[bt\_one];

Delay\_ms(10);

PORTC.F1 = 1;

}

}

P-1: Display 2123 to 2134 sequentially after a certain time duration using 4 digits seven segment display.

Circuit:



Code:

char arraycc[]={0x3F,0x06,0x5B,0x4F,0x66,0x6D,0x7D,0x07,0x7F,0x6F};

void main() {

int d\_zero,d\_one,d\_two,d\_three,i,j;

Trisb=0x00;

Trisc=0x00;

portb=0x00;

portc=0x00;

d\_zero=eeprom\_read(0x00);

d\_one=eeprom\_read(0x01);

d\_two=eeprom\_read(0x02);

d\_three=eeprom\_read(0x03);

while(1)

{

for(i=2123;i<=2134;i++) //counting 0-9999

{

d\_zero=i/1000; // for first digit of display

d\_one=((i/100)%10); // for second digit

d\_two=((i/10)%10); // for third digit

d\_three=i%10;

for(j=0;j<=10;j++)

{

portc.f0=0;

portb=arraycc[d\_zero];//display

delay\_ms(10);

portc.f0=1;

portc.f1=0;

portb=arraycc[d\_one];//display

delay\_ms(10);

portc.f1=1;

portc.f2=0;

portb=arraycc[d\_two];//display

delay\_ms(10);

portc.f2=1;

portc.f3=0;

portb=arraycc[d\_three];//display

delay\_ms(10);

portc.f3=1;

}

eeprom\_write(0x00,d\_zero);

eeprom\_write(0x01,d\_one);

eeprom\_write(0x02,d\_two);

eeprom\_write(0x03,d\_three);

delay\_ms(1);

}

}

}

P-3: Write a program for controlling a Servo Motor between 0°-180°



Code:

void rotateLeft90();

void rotate0();

void rotateRight90();

int i;

void main(){

Trisb=0x00;

portb=0x00;

while(1){

rotateLeft90();

delay\_ms(2000);

rotate0();

delay\_ms(2000);

rotateRight90();

delay\_ms(2000);

}

}

void rotateLeft90()

{

for(i=0;i<50;i++)

{

portb.f0=1;

delay\_us(800);

portb.f0=0;

delay\_us(19200);

}

}

void rotate0()

{

for(i=0;i<50;i++)

{

portb.f0=1;

delay\_us(1500);

portb.f0=0;

delay\_us(18500);

}

}

void rotateRight90()

{

for(i=0;i<50;i++)

{

portb.f0=1;

delay\_us(2200);

portb.f0=0;

delay\_us(17800);

}

}

P-5: Develop a program to rotate a Stepper Motor at different angles.



Code:

void main() {

      Trisb=0b00000000;//Port b as output;

      portb=0b11111111;

      do{

      Portb=0b00000011;

      delay\_ms(500);

      portb=0b00000110;

      delay\_ms(500);

      portb=0b00001100;

      delay\_ms(500);

      portb=0b00011000;

      delay\_ms(500);

      }

      while(1);//loop excuted infinite

}

P-6: Write a program to simulate Analog to Digital Conversion using virtual terminal.

Circuit:



Code:

int valAdc;

char x[4];

void main(){

UART1\_Init(9600);

ADC\_Init();

while(1){

valAdc= ADC\_Read(0);

IntToStr(valAdc,x);

UART1\_Write\_Text("Analog Value= ");

UART1\_Write\_Text(x);

UART1\_Write(13);

strcpy(x," ");

delay\_ms(1000);

}

}

P11. Write a program to control the speed of a DC motor based on your room temperature and PWM Technique



Code:

void main() {

short duty =0;// initial value for duty

TRISB=0x00; //port b as output

TRISD=0xff; //port d as input

Portb.f0=0xff;

portb.f1=0x00;

PWM1\_Init(1000);

PWM1\_Start();

PWM1\_Set\_Duty(duty);

while(1)

{

if(portd.f0==1)

{

Delay\_ms(100);

if(portd.f0==1)

{

duty=duty+10;

PWM1\_Set\_Duty(duty);

}

}

if(portd.f1==1)

{

Delay\_ms(100);

if(portd.f1==1)

{

duty=duty - 10;

PWM1\_Set\_Duty(duty);

}

}

Delay\_ms(10);

}

}

4: Write a program to display letter "Z" in dot matrix display.



**Code:**

void MSDelay(unsigned char Time)

{

unsigned char y,z;

for(y=0;y<Time;y++);

for(z=0;z<20;z++);

}

PortB=(0xFB);

MSDelay(10);

PortD=0x04;

PortB=(0xCF);

MSDelay(10);

PortD=0x02;

PortB=(0xC7);

MSDelay(10);

PortD=0x01;

PortB=(0xC3);

MSDelay(10);

}

}

void main() {

Trisb=0x00;

Trisd=0x00;

while(1){

PortD=0x80;

PortB=(0xC3);

MSDelay(10);

PortD=0x40;

PortB=(0xE3);

MSDelay(10);

PortD=0x20;

PortB=(0xF3);

MSDelay(10);

PortD=0x10;

PortB=(0xF9);

MSDelay(10);

PortD=0x08;